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IS 7979 (1984): Portable Pneumatic Rivetting Hammers [PGD  
8: Pneumatic Tools]



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Indian Standard



# SPECIFICATION FOR PORTABLE PNEUMATIC RIVETTING HAMMERS

( First Revision )

**1. Scope** — Covers the requirements for portable pneumatic rivetting hammers suitable for steel rivets up to 33 mm in diameter according to IS : 2155-1982 'Cold forged solid steel rivets for hot closing (6 to 16 mm diameter) (first revision)' and IS : 1929-1982 'Hot forged steel rivets for hot closing (12 to 36 mm diameter) (first revision)'.

## 2. Terminology

**2.1 Rivetting Hammer** — A percussive piston tool in which potential energy of compressed air acting on a free piston, is converted into kinetic energy. The piston, having this converted kinetic energy, strikes on the rivetting snap thus imparting this kinetic energy to the snap for the purpose of rivetting action.

**2.2 Retainer** — A device which holds the rivet snaps in position with the hammer body.

**2.3 Gauge Pressure** — Steady pressure of compressed air measured within 3 metres from inlet of rivetting hammer.

**2.4 Air Consumption** — Volume of air, corrected to standard atmospheric conditions of testing according to IS : 196-1966 'Atmospheric conditions for testing (revised)' consumed by rivetting hammer during pellet test without fluctuation of pressure during the test.

**3. Sizes and Main Dimensions** — As specified in Table 1.

## 4. General Requirements

**4.1** A suitable retainer, preferably of retaining spring type, shall be provided to hold the snap in position.

**4.2** Rivetting hammers shall be suitable for taking the rivet snap shanks according to IS : 6572-1972 'Dimensions for pneumatic light rivet snap shanks' and IS : 6574-1972 'Dimensions for pneumatic rivet snap shanks'.

### 4.3 Handles

**4.3.1 Type A** — Open handle with thumb lever throttle control ( see Fig. 1 ).

**4.3.2 Type B** — Closed handle with thumb lever throttle control ( see Fig. 2 ).

**4.3.3 Type C** — Closed handle with finger lever throttle control ( see Fig. 3 ).

**4.3.4 Type D** — Pistol grip handle with throttle trigger control ( see Fig. 4 ).

### 4.4 Air Inlet Connection

**4.4.1** Air inlet connection shall be fitted with an air strainer or screen forming a part of the nipple/bush which shall be effective in retaining solid particles in compressed air supply and shall be easily cleanable.

**4.4.2** Air inlet connection for pneumatic rivetting hammers of nominal sizes 4 and 5 shall be Rc  $\frac{1}{4}$ , and for other sizes it shall be Rc  $\frac{1}{2}$ , conforming to IS : 554-1975 'Dimensions for pipe threads where pressure tight joints are required on the threads'.

**4.5** The rivetting hammers shall be of such a design that the exhaust of compressed air from the tool may be directed in any direction depending upon the requirements.

**4.6** An instruction manual shall be supplied with each tool. Data to be provided in the manual shall be in accordance with 'Indian Standard Technical supply conditions for pneumatic tools' ( under preparation ).

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**5. Designation** — A pneumatic rivetting hammer of nominal size 12 and having Type B handle shall be designated as:

Rivetting Hammer 12 B IS : 7979

## 6. Tests

**6.1 Pellet Test** — The rivetting hammer shall be operated on a test rig for a specified period to beat down a cylindrical pellet of annealed copper or steel. The compression of the pellet shall be measured and shall be as laid down in 6.1.4.

**TABLE 1 NOMINAL SIZE, OVERALL LENGTH AND MASS**

( Clause 3 )

All dimensions in millimetres.

Nominal Size	Hot Steel Rivetting Range Up to and Including	Overall Length, Max	Mass, Max kg
4	4	200	1.5
5	5	230	2.5
8	8	350	6.0
12	12	430	8.0
14	14	430	8.0
16	16	450	8.5
20	20	470	9.5
22	22	510	10.2
24	24	530	10.5
27	27	560	11.0
30	30	590	11.5
33	33	620	12.0

**Note** — In case the rivets are of other material, the manufacturer may be consulted for the rivetting range.

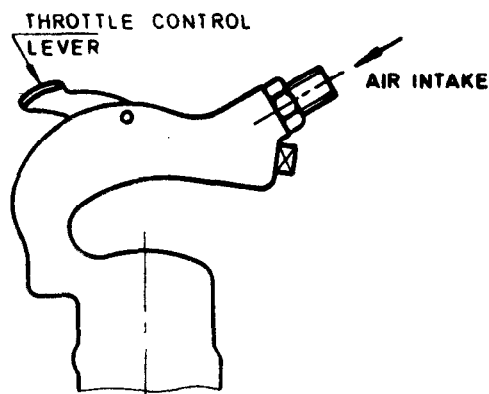


FIG. 1 OPEN HANDLE WITH THUMB LEVER THROTTLE CONTROL, TYPE A

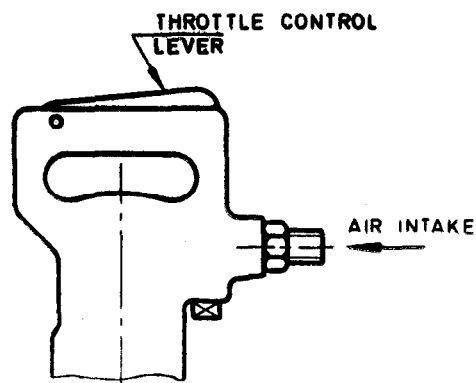


FIG. 2 CLOSED HANDLE WITH THUMB LEVER THROTTLE CONTROL, TYPE B

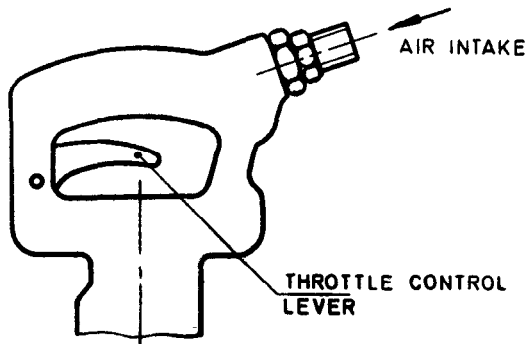


FIG. 3 CLOSED HANDLE WITH FINGER LEVER THROTTLE CONTROL, TYPE C

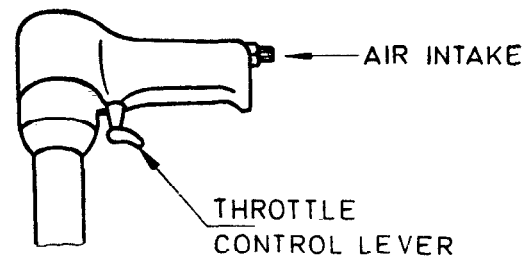


FIG. 4 PISTOL GRIP HANDLE WITH THROTTLE TRIGGER CONTROL, TYPE D

**6.1.1** The test rig shall consist of a firm and solid steel base having a hardened steel bush, upon which a substantial pot shall be mounted ( see Fig. 5 ).

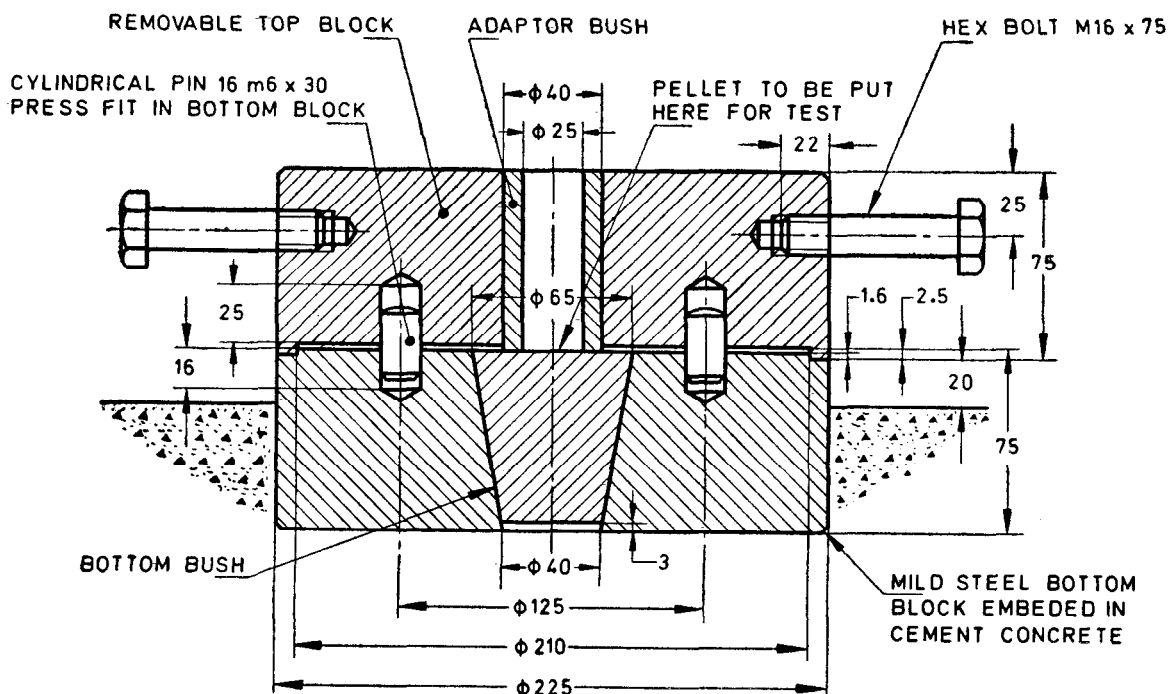


FIG. 5 TEST RIG FOR PELLET TEST

**6.1.2** The sizes, material and the hardness of pellets used for the tests shall be as given in Table 2. The pellets shall be placed vertically in the pot.

**6.1.3** For conducting the test, the rivetting hammer fitted with a blunt steel plunger of sufficient hardness, shall be placed in position so that the plunger rests on the pellet. The tool shall then be operated for five seconds ( measured with a stopwatch ). The hammer and the plunger shall then be removed and pellet withdrawn from the pot.

**6.1.4** The compression of the pellet shall be measured with micrometer and shall be within  $\pm 5$  percent of the values declared by the manufacturer.

**6.2 Air Consumption Test** — The water displacement meter or any other equally suitable instrument shall be used to determine the quantity of air consumed per minute at pressure measured at a distance of not more than 3 m from the inlet of the tool while the pellet test is being conducted as described in 6.1. The air consumption, corrected to atmospheric conditions of testing according to IS : 196-1966 shall be within  $\pm 5$  percent of the values declared by the manufacturer.

**6.3 Operation Test** — Each rivetting hammer shall be tested for easy starting and stopping. It shall also be tested for easy fitment and removal of the rivet snaps in the bushing. The hammer shall show no flaws which may have been developed during testing.

**TABLE 2 SIZE, MATERIAL AND HARDNESS OF PELLETS**  
( Clause 6.1.2 )

Nominal Size of Rivetting Hammers	Pellet			
	Material	Hardness	Diameter $\pm 0.1$ mm	Length $\pm 0.1$ mm
4	Copper annealed at 650 to 700°C and water quenched	48-62 HV	9.5	9.0
5				
8				
12	Steel 20C8 of IS : 1570 (Part 2)-1979 'Schedules for wrought steels for general engineering purposes: Part 2 Carbon steels (unalloyed steels) (first revision)'	125-150 HV	12.5	10.0
14			12.5	10.0
16			12.5	10.0
20			14.5	15.0
22			14.5	15.0
24			14.5	15.0
27			14.5	15.0
30			14.5	15.0
33			14.5	15.0

#### 6.4 Endurance Test

**6.4.1 For type approval** — Each sample conforming to the pellet test shall be run in test rig for 100 hours in the manufacturers' test room ( 100 hours run need not be at a stretch and may be done over a period ), after which the tools shall be dismantled and all parts shall be examined. No part shall either break during testing or shall be found broken, cracked or deformed on examination.

**6.4.2 For routine testing** — One percent, the minimum being one, of tools on order if the order is for 50 pieces or more, shall be run in the test rig to disseminate energy for 15 h in the manufacturer's test room ( 15 h run need not be at a stretch and may be done over a period ), after which the tools shall be dismantled and all parts shall be examined. The part shall either break during testing or be found broken, cracked or deformed on examination.

**7. Marking** — Each hammer shall be marked with the manufacturer's name or trade-mark, nominal size and the year of manufacture.

**7.1 ISI Certification Marking** — Details available with the Indian Standards Institution.

**8. Packing and Packaging** — Before packing, the inlet, exhaust and other openings of each tool shall be adequately protected/covered against ingress of dust and other harmful materials. Packing shall be done in accordance with 'Indian Standard Technical supply conditions for pneumatic tools' (under preparation).

### EXPLANATORY NOTE

This specification was first issued in 1976. In view of the experience gained in this field, the revision has been taken up. Alterations have been made in overall length, mass and pellet dimensions. Compression of pellet and air consumption requirements have been toleranced on the declared values of the manufacturers.